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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,288	12/20/2001	Victor V. Kulish	VVK 2-001	2835
7590	10/18/2005		EXAMINER	
Gerald L. Smith Mueller and Smith, LPA 7700 Rivers Edge Drive Columbus, OH 43235			CHORBaji, MONZER R	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/022,288	KULISH ET AL.
	Examiner MONZER R. CHORBAJI	Art Unit 1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 28 July 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-19 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 20 December 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This final action is in response to the amendment received on 07/28/2005

Claim Objections

1. Claims 3, 5, 7, 11 and 16 are objected to because of the following informalities:

For example, in amended claim 3, line 2, delete "a" and replace it with "an". The same applies to claims 5, 7, 11 and 16. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted state of the prior art in view of Korenev (U.S.P.N. 6,628,750).

With respect to claim 1, the specification teaches on page 4, numbered lines 12-22 that linear induction accelerators (LIA) are used as sterilizers; however, the specification fails to teach the following: using LIA with multiple radiation energy levels output, the output is in vacuum connection with the LIA, manipulating the output assembly so that radiation is distributed over the treatment area to non-destructively sterilize the material and transporting the material through the treatment region. The Korenev reference, which is in the art of sterilizing products conveyed through a treatment region by irradiating them with an electron accelerator, teaches the following: any type of linear accelerator can be used as a source of electrons (col.5, lines 60-62), using multiple radiation energy levels (equivalent to multi channel) output (figure 6, 30 sub1 through 30 sub n and col.4, lines 56-67 and col.5, lines 1-12) from a single electron accelerator (figure 6, 10), the output is in vacuum connection with the electron accelerator (figure 6, 10, 30 sub 1, 16 sub1 and col.4, lines 44-54), manipulating the output assembly so that radiation is distributed over the treatment area (col.4, lines 49-53) to non-destructively sterilize the material (col.3, lines 56-64) and transporting the material through the treatment region (col.1, lines 47-49). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made

to modify the teaching of the admitted state of the prior art by including multiple radiation energy levels output as taught by the Korenev reference in order to broaden the sterilization applications of various objects by choosing between effective surface sterilization or depth sterilization of objects (col.1, lines 30-50).

With respect to claims 2 and 4, the specification teaches on page 4, numbered lines 10-22 that single beam linear induction accelerators (LIA) are used as sterilizers; however, the specification fails to teach using LIA with multiple radiation energy levels output and manipulating the output assembly by causing the beam or beams to sweep across the treatment area associated with each output. The Korenev reference, which is in the art of sterilizing products conveyed through a treatment region by irradiating them with an electron accelerator, teaches the following: any type of linear accelerator can be used as a source of electrons (col.5, lines 60-62), using multiple radiation energy levels (equivalent to multi channel) output (figure 6, 30 sub1 through 30 sub n and col.4, lines 56-67 and col.5, lines 1-12) from a single electron accelerator (figure 6, 10) and manipulating the output by causing the beam or beams to sweep across the treatment area associated with each output (col.4, lines 49-53). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including an electron beam magnetic oscillator at the output as taught by the Korenev reference in order to insure that all the surfaces of an object is irradiated (col.4, lines 49-52).

With respect to claims 3 and 5, the specification teaches on page 4, numbered lines 18-19 that device is capable of producing X-ray radiation.

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6. Claims 6-7, 10-12 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted state of the prior art in view of Korenev (U.S.P.N. 6,628,750) as applied to claim 1 and further in view of Schonberg et al (U.S.P.N. 5,357,291).

With respect to claim 6, both the admitted state of the prior art and the Korenev reference fail to teach the concept of defocusing the outputs, which overlap and mutually extend over the treatment region; however, the Schonberg reference, which is in the art of using linear induction accelerator (col.3, lines 55-60) to irradiate fluids, teaches the use of means to defocus the electron beam (col.10, lines 25-26). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including defocusing means at the output as taught by the Schonberg reference in order to spread the beam substantially uniformly across the window resulting in improving the efficacy of sterilization (col.10, lines 25-26).

With respect to claims 10 and 15, the admitted state of the prior art does not mention generating, transferring the output in a horizontal direction and transporting the material vertically through the treatment region. The Korenev reference teaches generating and transferring the output in a vertical direction and transporting the material horizontally through the treatment region, but the Schonberg reference, which is in the art of using linear induction accelerator (col.3, lines 55-60) to irradiate fluids, teaches generating (figure 3, 11), transferring the output in a horizontal direction (figure 3, unlabeled electron arrow and 32) and transporting the material vertically through the

treatment region (in figure 3, material to be treated enters the chamber vertically downward and upward through inlets 44 and is transported by pump 70 vertically through outlets 24 in both directions). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art in view of the Korenev reference by including horizontal irradiation means as taught by the Schonberg reference in order to make the irradiation system transportable (col.2, lines 52-56).

With respect to claims 7, 11 and 16, the specification teaches on page 4, numbered lines 18-19 that device is capable of producing X-ray radiation.

With respect to claims 12 and 17, both the admitted state of the prior art and the Korenev reference fails to teach the concept of defocusing the outputs, which overlap and mutually extend over the treatment region; however, the Schonberg reference, which is in the art of using linear induction accelerator (col.3, lines 55-60) to irradiate fluids, teaches the use of means to defocus the electron beam (col.10, lines 25-26). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including defocusing means at the output as taught by the Schonberg reference in order to spread the beam substantially uniformly across the window resulting in improving the efficacy of sterilization (col.10, lines 25-26).

7. Claims 8-9, 13-14 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted state of the prior art in view of Korenev (U.S.P.N.

6,628,750) and Schonberg et al (U.S.P.N. 5,357,291) as applied to claims 6, 12 and 17 and further in view of Blacker, Jr. et al (U.S.P.N. 4,704,565).

With respect to claims 8-9, 13-14 and 18-19, both the admitted state of the prior art and the Korenev reference fail to disclose manipulating the output by azimuthally-symmetrically or azimuthally-asymmetrically defocusing it. The Schonberg reference teaches placing defocusing means near the window (col.10, lines 25-26). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including defocusing means at the output as taught by the Schonberg reference in order to spread the beam substantially uniformly across the window resulting in improving the efficacy of sterilization (col.10, lines 25-26).

With respect to claims 8-9, 13-14 and 18-19, the Schonberg reference fails to explicitly disclose manipulating the output by azimuthally-symmetrically or azimuthally-asymmetrically defocusing it. The Blacker reference, which in the art of focusing electron beams generated from an electron source, teaches forming a circle spot (figure 1, 22, equivalent to azimuthally-symmetrical defocusing as mentioned in the specification on page 8, numbered lines 12-15) or an elongated spot (figure 2, 28, equivalent to azimuthally-asymmetrical defocusing as mentioned in the specification on page 8, numbered lines 12-15). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art in view of the Korenev and the Schonberg references by including means for forming beam spots of different shapes as disclosed by the Blacker

reference since forming a small symmetrical beam spot is a major factor in achieving optimum resolution (col.1, lines 57-59).

Response to Arguments

8. Applicant's arguments filed on 07/28/2005 have been fully considered but they are not persuasive.

On page 8 of the Remarks section, applicant argues that, "the accelerator generates electrons at only one port at a time, Korenev at col.2, lines 63-64." The instant method claims do not recite simultaneously irradiating with multiple electron beams and thus the device of the Korenev reference has multiple electron outlets or channels. In addition, the Korenev reference teaches that depending on the characteristics of a product the device is capable of producing electrons in a progressive shorter time intervals of multiple outlets, i.e., channels (col.3, lines 1-9).

On page 9 of the Remarks section, applicant argues that, "Thus, the output of this sterilizer at a given time is a single electron beam of a particular energy." The examiner disagrees since the Korenev reference is capable of producing electrons of various energies depending on the dimensions of a product for irradiation (col.2, lines 58-62).

On page 9 of the Remarks section, applicant argues that, "Initially, Applicants would note that there is no teaching or suggestion to combine an LIA and an RF-type device." The examiner disagrees since one of the reasons for combining the Korenev reference with the admitted state of the prior art is the concept of using multiple radiation energy levels outputs in a radiation device in the art of sterilizing materials and

not for substituting the sources of radiations. Again, note that the admitted state of the prior art teaches that LIA devices are used as sterilizer. Such a combination has nothing to do with the source of the radiation energy. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including multiple radiation energy levels output as taught by the Korenev reference in order to broaden the sterilization applications of various objects by choosing between effective surface sterilization or depth sterilization of objects (col.1, lines 30-50).

On page 9 of the Remarks section, applicant argues that, "An MLIA is structurally different from an LIA, an RF-type accelerator, or the combination thereof; it performs in a different way and achieves a different result." The examiner disagrees since the specification on pages 2, numbered lines 22-32 through page 5, numbered lines 22, teaches that both LIA and MLIA uses the same relativistic electron beam source where as LIA is much larger in size than MLIA and that MLIA has multiple electron beam energies versus LIA has single electron beam energy. The combination of the teachings of the admitted state of the prior art and the Korenev reference result in an MLIA irradiator with multiple electron energies outlets.

On page 9 of the Remarks section, applicant argues that, "This language does not indicate that any type of linear accelerator may be used." The examiner disagrees. The Korenev reference teaches any type of linear accelerator can be used as a source of electrons (col.5, lines 60-62) since different linear accelerators have different energy levels. Also, in column 4, lines 57-60, the Korenev reference uses the phrase "the

accelerator, such as a Rhodotron accelerator which uses RF fields". This statement means that the use of an RF energy source is not critical to the sterilizer of the Korenev reference. In addition, as explained above, the reasons for combining the Korenev reference with the admitted state of the prior art is the concept of using multiple radiation energy levels outputs in a radiation device in the art of sterilizing materials and not for substituting one source of energy for another.

On page 10 of the Remarks section, applicant argues that, "None of the references, either alone or in combination use a plurality of beams simultaneously to treat a single object." As the claims stand, none recite the "simultaneously" feature. In addition, the Korenev reference teaches using multiple radiation energy levels (equivalent to multi channel) output (figure 6, 30 sub1 through 30 sub n and col.4, lines 56-67 and col.5, lines 1-12) from a single electron accelerator (figure 6, 10) and manipulating the output by causing the beam or beams to sweep across the treatment area associated with each output (col.4, lines 49-53). In addition, the Korenev reference teaches that depending on the characteristics of a product the device is capable of producing electrons in a progressive shorter time intervals of multiple outlets, i.e., channels (col.3, lines 1-9) so that a product is irradiated without gaps.

On page 11 of the Remarks section, applicant argues that, "Schonberg also does not disclose an accelerator having more than one channel for producing more than one electron beam. Finally, Schonberg does not disclose defocusing more than one electron beam in a manner where the defocused beams overlap and mutually extend over the treatment region." The examiner disagrees. First with regard to having more than one

channel producing more than one electron beam, such a limitation is already disclosed in the Korenev reference. Second, the Schonberg teaches the use of defocusing means (col.10, lines 25-26). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art by including defocusing means at the output as taught by the Schonberg reference in order to spread the beam substantially uniformly across the window resulting in improving the efficacy of sterilization (col.10, lines 25-26).

On page 11 of the Remarks section, applicant argues that, "Blacker is thus in a different art field addressing a different problem with a different solution." The examiner disagrees since the Blacker reference, which in the art of focusing electron beams generated from an electron source, teaches forming a circle spot (figure 1, 22, equivalent to azimuthally-symmetrical defocusing as mentioned in the specification on page 8, numbered lines 12-15) or an elongated spot (figure 2, 28, equivalent to azimuthally-asymmetrical defocusing as mentioned in the specification on page 8, numbered lines 12-15). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teaching of the admitted state of the prior art in view of the Korenev and the Schonberg references by including means for forming beam spots of different shapes as disclosed by the Blacker reference since forming a small symmetrical beam spot is a major factor in achieving optimum resolution (col.1, lines 57-59).

Conclusion

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9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN KIM can be reached on (571) 272-1142. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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